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CLASSIFICATION		REPORT
CENTRAL INTELLIGENCE AGENCY		
INFORMATION FROM		
FOREIGN DOCUMENTS OR RADIO BROADCASTS		CD
COUNTRY	USSR	DATE OF INFORMATION 1949
SUBJECT	Scientific; Economic - Agriculture	
HOW PUBLISHED	Monthly periodical	DATE DIST. 30 Jan 1950
WHERE PUBLISHED	Moscow	NO. OF PAGES 3
DATE PUBLISHED	Oct 1949	
LANGUAGE	Russian	SUPPLEMENT TO REPORT NO.

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SOURCE Elektrichestvo, No 10, 1949.

PROBLEMS OF USING ELECTRIC POWER
IN AGRICULTURAL PRODUCTION

Engr D. T. Komarov

The All-Union Scientific-Technical Session on problems of using electric power in agricultural production was held from 22 July to 27 July 1949 in Kiev. The session was called by the Ministries of Agriculture of the USSR and the Ukrainian SSR, the All-Union Scientific Engineering-Technical Society of Power Engineers (VNIITOE), and the Academy of Sciences Ukrainian SSR. Representatives of the Ministries of State Farms of the USSR and the Ukrainian SSR, the Ministry of Agricultural Machine Building USSR, the All-Union Institute for Electrification of Agriculture (VIESKh), the All-Union Institute of Agricultural Machine Building (VIESKHOM), and other organizations participated.

In his report concerning the use of electric power in agriculture and the immediate problems of introducing power into agricultural production A. M. Sarkisyan, Chief Engineer, "Glavsel'elektro," Ministry of Agriculture, noted that incomplete loading of rural power units and the incomplete introduction of electric power into farm production processes is chiefly due to lack of attention to these matters, and to the fact that electric motors have not been popularized as the most reliable and economical engine for kolkhozes.

He said that the farm machines produced by industry, as a rule, are not designed to be driven by electric motors. The electric machine-building plants are not producing special types of electric motors designed for use in farming with (low speed, low starting currents, etc). In conclusion, Sarkisyan discussed the measures which must be taken to provide for mass introduction of electric power in agriculture.

M. G. Yevreinov, MIMESKh (Moscow Institute for Mechanization and Electrification of Agriculture), Active Member, All-Union Academy of Agricultural Sciences imeni Lenin, submitted a report on "The Scientific-Technical Principles of Introducing Electricity into Agriculture." He stressed the importance of the problem of designing an efficient electric drive for farm machines. He emphasized that a survey of all types of stationary farm machines must be made. These machines must be reconstructed to use the advantages of electric power, he said. Yevreinov pointed out that a thorough study of farm machines and electric drive and the determination of their power indices is the task of such institutes as the MIMESKh, the VIESKh, and the VIESKHOM.

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A. A. Krasnov, VIESKh, Candidate of Technical Sciences, submitted a report on "Complex Electrification as a Factor in Increasing the Effectiveness of Agricultural Production." He pointed out that considerably greater effectiveness would be attained in the use of electric power by complex electrification, i.e., by extensive and efficient introduction of electric power into all processes of farm production and life where its use is more expedient or economical in comparison with other methods.

F. M. Listov, Power-Engineering Institute imeni Krzhizhanovskiy, Academy of Sciences USSR, Doctor of Technical Sciences, reported on "The Principles of Electrification of Agriculture on the Basis of the Electric Tractor, the Electric Combine, and Other Mobile Machines." He analyzed the plan for complex electrification of agriculture drawn up in the Power-Engineering Institute imeni Krzhizhanovskiy and its fundamental link, the electric tractor from the standpoint of technical, operational, and economic indices. Listov discussed the 10 years' experience in the use of Soviet electric tractors in the Engel's MTS Saratov Oblast. After hearing this report, the participants in the session were shown a documentary film, "The Electric Tractor."

G. V. Gornovesov, Engineer, Zaporozhye Affiliate of the VIESKh, submitted a report on "Complex Electrification of Production Processes in Livestock Raising." M. Ye. Kulik, VIESKh, Candidate of Technical Sciences, submitted a report on the electrification of production processes of fodder preparation in kolkhoz livestock farms. V. I. Smirnov, VIESKh, Candidate of Technical Sciences, reported on the use of electrothermic instruments in the livestock-raising economy.

G. I. Nazarov, MIMESKh, Candidate of Technical Sciences, gave a report on "An Efficient Electric Drive for Farm Machines and the Requirements It Imposes on the Agricultural Machine and Electric Construction Industry". The report, "An Electric Drive for Farm Machines Produced by the Ministry of Agricultural Machine Building USSR," was submitted by Ye. A. Kolyasin, VISKHOM, Candidate of Technical Sciences.

N. A. Sazonov, VIESKh, Candidate of Agricultural Sciences, reported on "The Use of Directly Connected Induction Motors with Short-Circuited Rotors in Agriculture". Sazonov pointed out methods for selecting the motor with the correct power rating and listed the measures which must be taken in using electric motors with short-circuited rotors in agriculture.

In his report, "Compounding Synchronous Motors in Rural Power Stations", L. V. Teukernik, Institute of Electrical Engineering, Academy of Sciences, Ukrainian SSR, Candidate of Technical Sciences, showed that compounding of generators from ordinary current transformers (through the exciter) is the most simple and reliable method of improving the operating characteristics of rural electric power stations. He pointed out that compounding makes it possible to start short-circuited motors which are commensurable in power with the generator.

Docent A. P. Repetin, Section on Industrial Electrical Engineering, Kiev Department of NIPOE, submitted a report on "The Organization of Repair of Electrical Machines and Equipment in Agriculture."

S. V. Shchurov, VIESKh, reported on methodological principles in planning the utilization of local power resources for the electrification of agriculture. S. N. Kudin, Engineer, Ukrsel'elektroproyekt (Ukrainian Agricultural Electrification Project) submitted a report on an experiment in compiling a general plan for the development of rural electrification in the Ukrainian SSR. Engineer G. S. Kyachev, Zaporozh'ye Affiliate, VIESKh, reported on "Norms for Power Consumption in Agriculture and Methods for Calculating Loads."

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The report "The Role of Rural Power Resources in the Development of Rural Electrification," was given by Engineer L. S. Khilobchenko, Ukrsel'elektroproyekt. V. G. Kholmkiy, Candidate of Technical Sciences, Institute of Steam Power Engineering, Academy of Sciences Ukrainian SSR, reported on "Expedient Limits in the Scope of an Electrified Agricultural Region."

At the final meeting of the session, M. V. Lugovskoy, VIESKh, Candidate of Technical Sciences, reported on "Mechanization of Construction and Installation Work." He discussed the suggestions worked out by the Institute for Mechanization of Work in Constructing Rural Electric Power Plants. A construction installation station (SMS) was proposed as the basic production unit.

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